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Organizations as Networks of Communication Episodes: Turning the Network Perspective Inside Out

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Abstract

Over the last decades, the idea that *communication constitutes organizations* (CCO) has been gaining considerable momentum in organization studies. The CCO perspective provides new insights into key organizational issues, such as the relation between stability and change, between micro-level and macro-level phenomena, or between emergence and control. However, despite various theoretical advancements, the CCO perspective's range of methodologies is still limited to analyzing local communication episodes, rather than studying organizations as broader networks of communication episodes. In this paper, we present a new methodological approach to the study of the relation between organization and communication, based on network analysis. Following a discussion of existing network approaches, we incorporate the fundamental assumptions of the CCO perspective into a methodology that places communication at the center of network analysis by turning the prevalent network perspective inside out, so that the vertices of the network represent communication episodes and the edges represent individuals. We illustrate our methodology with an empirical case study, in which we examine the structures and dynamics of an actual organization as a network of communication episodes.

Keywords

Organization theory, organizational communication, communication constitutes organizations (CCO), Montreal School, network analysis

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Introduction

The idea that organizations essentially consist of interlocking episodes of communication has given rise to a new theoretical approach in organization studies, the "communication constitutes organizations" perspective or, in short, the "CCO" perspective (Putnam & Nicotera, 2009). This approach has grown rapidly in recent years, featuring popular tracks at major North American and European conferences (e.g., AoM and EGOS), special issues of *Organization Studies* (Cooren, Kuhn, Cornelissen, & Clark, 2011) or *Management Communication Quarterly* (Bisel, 2010), edited volumes (e.g., Cooren & Robichaud, forthcoming; Cooren, Taylor, & Van Every, 2006; Putnam & Nicotera, 2009), as well as a growing number of publications in various reputable journals (e.g., Ashcraft, Kuhn, & Cooren, 2009; Koschmann, Kuhn & Pfarrer, forthcoming; Robichaud, Giroux, & Taylor, 2004). The scope of the CCO perspective is even broader if we include all works that are in line with CCO thinking but do not necessarily adopt the CCO label. For instance, in his influential work on change management, Ford suggests that organizations can be understood as "networks of conversations" (1999, p. 485). In a similar vein, Sillince elaborates a view of organization as continuous "discursive construction" (2007, p. 363). Weick even goes as far as to assert that "the communication activity *is* the organization" (1995, p. 75, own emphasis added). Various authors have recast this core idea in a number of concepts, arguing that organizations can be conceptualized as fundamentally shaped by discourse (Boje, Oswick, & Ford, 2004; Fairhurst & Putnam, 2004) narratives (Czarniawska, 1998), rhetorical tropes (Cornelissen, Oswick, Christensen & Phillips, 2008), texts (Cooren, 2004; Kuhn, 2008; Taylor, 1999), or talk (Boden, 1994).

Works drawing explicitly on the CCO perspective portray organizations "as ongoing and precarious accomplishments realized, experienced, and identified primarily […] in communication processes" (Cooren et al., 2011, p. 1150). The focus on the precarious character of communication (i.e., the permanent negotiation and renegotiation of meaning) sheds new light on (at least) three central aspects of organization studies: First, it leads to a new understanding of the mechanisms that create stability and change in organizations—a key concern in the field (e.g., Feldman & Pentland, 2003; Tsoukas & Chia, 2002). Both stability and change can be explained as the surface realization of the underlying dynamics of communication and the negotiation of meaning that constitute the organization (Kuhn, 2008; Taylor & Van Every, 2000). Second, the CCO perspective provides a new response to the challenge of reconciling the micro level of local communication, the meso level of the

organization, and the macro level of society (Seidl & Becker, 2005a). Sequences of communication events unfold into communication episodes, which in turn recursively interlock to form a self-sustaining network of communication that constitutes an organization. At the same time, organizational communication draws on institutionalized templates of communication that society holds in stock (Cooren & Fairhurst, 2009; Seidl 2007; Taylor, Cooren, Giroux, & Robichaud, 1996). Third, the CCO perspective offers a new take on the relation between emergence and control. Again, it is the fundamentally contested character of meaning that explains why the scope of managerial control over the communicative practices that constitute an organization is limited (Fairhurst, 2008; Luhmann, 2003).

While the theoretical aspects of the CCO perspective have been significantly developed over the last few years, there are still considerable methodological limitations. Existing studies rely primarily on qualitative methodologies (e.g., conversation analysis) and focus mainly on local communication episodes (e.g., Cooren, Brummans, & Charrieras, 2008; Fairhurst & Cooren, 2009; Spee & Jarzabkowski, 2011). The main purpose of these empirical studies is to demonstrate "the emergence of organization in communication" (Taylor & Van Every, 2000, p. 34). To date, however, there are no studies that empirically investigate how individual episodes of communication connect to each other to form collectively an organization as a network of communication episodes. Hence, for the CCO perspective to be regarded as a serious alternative, a more encompassing methodological approach is necessary. As Taylor and his colleagues emphasize, "Our theory of communication must be capable of explaining the emergence and sustainability of large, complex organizations" (1996, p. 4).

The network paradigm in organization studies (for an overview, see Borgatti & Foster, 2003) provides a natural basis on which to build a methodological approach, not least because many scholars who have adopted the CCO perspective explicitly refer to organizations as "networks" of communication episodes, conversations, or texts (e.g., Kuhn, 2008; Robichaud et al., 2004; Taylor et al., 1996). Unsurprisingly, several studies detect a natural affinity between concepts of organization from a communication perspective and the methodology of network analysis. In a recent review of the CCO perspective and related works, Ashcraft, Kuhn, and Cooren (2009) mention that several network studies exhibit (at least) an *embedded* or *implicit* form of CCO thinking. For instance, Monge and Contractor (2003) perceive communication as the "glue" that holds an organization together as a network. Nevertheless, Ashcraft and her colleagues (2009) assert that these network studies differ from an *explicit*

form of CCO thinking in that they do not espouse the idea that organizations essentially consist of communication processes. In other words, existing network approaches do not fully reflect the ontological turn proposed by CCO scholars, according to which organizations are conceptualized as communication phenomena. Therefore, the authors call for further work that will render network approaches capable of advancing empirical research within the CCO perspective.

In response to such calls, we develop a new network approach to the study of organizations that encompasses the fundamental assumptions of the explicit CCO perspective (Ashcraft et al., 2009). We propose that the prevalent logic of organizational network analysis should be turned inside out, in the sense that in our model the vertices of a network represent communication episodes rather than individuals, and the edges represent individuals participating in these communication episodes rather than relationships based on communication. In this regard, we avoid "reverting to the kind of methodological individualism that would claim an organization can simply be understood as the sum of its (human) parts" (Sewell, 2010, p. 148). We illustrate this methodological proposal with an empirical case study, in which we analyze the structural change of organizational communication over time, thus emphasizing the emergent and processual character of the organization as communication.

The contributions of our methodological proposal to organization studies are twofold: First, we contribute to the field of organization studies in general by providing the CCO perspective with a methodological means of capturing the emergence and maintenance of large, complex organizations as communication-based entities (Taylor et al., 1996, p. 4). Second, we contribute to the literature on organizational networks in particular (e.g., Borgatti & Foster, 2003) with a new methodological approach that explicitly links the concept of communication to organization and is theoretically grounded in the CCO perspective's well-developed ontology of organization *as* communication (Bisel, 2010).

The remainder of our paper is structured in five sections. We begin with a brief review of the CCO perspective, then go on to discuss the extent to which existing network approaches are compatible with the fundamental assumptions of the explicit strains of the CCO perspective (Ashcraft et al., 2009). In the third section, we present our approach to the study of organizations as networks of communication episodes, for which we provide an empirical illustration in the fourth section. In the final section, we discuss the contributions of this new

network approach to the study of organization as communication and take a brief look at the prospects of further research.

The CCO Perspective in Organization Studies

The CCO perspective has emerged at the transdisciplinary intersection of organization studies and communication studies (Putnam & Nicotera, 2009). It addresses one of the most fundamental questions in organization studies: "What is an organization?" (Taylor & Van Every, 2000, p. ix). In response to this question, proponents of the CCO perspective argue that organizations can be conceptualized as essentially consisting of *communication* (e.g., Ashcraft et al., 2009; Putnam & Nicotera, 2009). Thus, the CCO perspective offers an alternative view of the common notion that organizations are constituted by their members (see, e.g., March & Simon, 1958, p. 110, who maintain that "an organization is, after all, a collection of people and what the organization does is done by people"). By conceptualizing organizations as unfolding and interlocking networks of communication processes (Taylor & Van Every, 2000), the CCO perspective turns this common understanding of organization inside out. It is only through communication that organization is created and sustained.

The CCO perspective is well in line with other important streams of theorizing in organization studies that have replaced the individual as the constitutive element of organizations with concepts such as routines (Feldman & Pentland, 2003), activity bundles (e.g., Colbert, 2004), or decisions (Ahrne & Brunsson, 2011). However, CCO thinking goes beyond these works in at least three respects: First, the concept of communication is a more basic concept than routines, activity bundles, or decisions in the sense that the latter all involve continuous processes of meaning construction (Luhmann, 1995). Accordingly, other concepts related to organizations, such as membership (McPhee & Zaug, 2000), strategy (Spee & Jarzabkowski, 2011), leadership (Fairhurst, 2008), entrepreneurship (Cornelissen & Clarke, 2010), boundaries (Taylor, 2009), identity (Seidl, 2005), or power (Kuhn, 2008), are treated as direct or indirect products of communication. Second, in contrast to the work of Feldman and others, the CCO perspective provides us with a relational ontology of organizations (Cooren, 2010, 2012; see also Cooper, 2006). The proponents of this perspective stress that instances of communication that constitute organizations cannot be understood in isolation; they can only be defined through their specific relation to other instances of communication (Cooren, 2012; Luhmann, 1992). In that respect, the CCO perspective scores strongly on studying "relationality rather than thinghood" (Cooper, 2005, p. 75). Third, because the concept of

communication emphasizes the continuously negotiated character of meaning (Cooren et al., 2011, p. 1150), it is particularly suitable for capturing the inevitably processual, historically situated, and politically contested character of organizing (Kuhn, forthcoming).

In general, we can distinguish between two strains of CCO thinking in the literature: the *embedded* and the *explicit* strain (Ashcraft et al., 2009). The characteristic of embedded (or implicit) strains is that "constitutive claims are not their primary focus" (Ashcraft et al., 2009, p. 9). Among studies representative of this tradition, the Ashcraft and her colleagues mention works on organizational culture (e.g., Eisenberg & Riley, 2001), power (e.g., Deetz, 2005; Mumby, 2001), or networks (e.g., Monge & Contractor, 2003). In contrast, the explicit strains of CCO thinking emphasize the constitutive character of communication for organizations. The same authors name approaches based on structuration theory (e.g., DeSanctis & Poole, 1994; McPhee & Zaug, 2000) as well as the work of the "Montreal School" of organizational communication (e.g., Cooren, 2004; Cooren et al., 2006; Robichaud et al., 2004; Taylor & Van Every, 2000) as the most prominent strains in this tradition. More recently, Cooren, Cornelissen, Kuhn, and Clark (2011) acknowledge a third relevant strain of explicit CCO thinking, that is, Luhmann's theory of social systems (Luhmann, 1995, 2003; Schoeneborn, 2011; Seidl & Becker, 2005b).

Taylor and Van Every (2000), in one of the most influential works of the Montreal School, conceive organizations as alternating episodes of conversation (where the organization is accomplished *in situ*) and textualization (where the organization is a recognizable actor that creates textual representations of itself): "The textual dimension corresponds with the recurring, fairly stable and uneventful side of communication […], while the conversational dimension refers to the lively and evolving co-constructive side of communication" (Ashcraft et al., 2009, p. 20). Similarly, Luhmann (2003) conceptualizes organizations as self-referential and interconnected episodes of communication. In his processual view of organizations, the perpetuation of communication becomes a matter of organizational continuation and survival. In this context, we need to consider that conversations, as the main "building blocks" of organizations (Ashcraft et al., 2009, p. 7), are inherently ephemeral in character. As soon as they are uttered, they vanish (Hernes & Bakken, 2003, p. 1522). Organizational continuation and survival depend on whether or not "connectivity" (Nassehi, 2005, p. 181) between dispersed communication events can be achieved; that is, whether or not such events

interconnect in a self-referential manner (Luhmann, 2003; McPhee & Zaug, 2000; Weick, 1995).

Cooren and Fairhurst (2009) propose that a "bottom-up" perspective on the communicative constitution of organizations should be adopted; that is, that an organization should be conceived as an emergent phenomenon that is fundamentally rooted in local communication. The key question then lies in how local and ephemeral communication events and "scale up" to long-lasting and stabilized forms of organization (Cooren & Fairhurst 2009, p. 123). Other proponents of the CCO perspective suggest that communication episodes recurrently and recursively refer to each other, thus creating a dense network of communication in both space and time (Luhmann, 2000; Taylor et al., 1996). Such networks typically emerge around symbolic (e.g., semantics, topics) or material (e.g., texts, tools, technologies) elements that enable the dislocation and perpetuation of an organization (Cooren, 2006). However, the incarnation and perpetuation of the organization as a network of communication is neither an exclusively bottom-up process nor does it take place in isolation; instead, all communication processes are embedded in a wider societal context from which they can draw on readily available templates of meaning. For instance, a new organization comes into existence by drawing on concepts such as membership or hierarchy in and through language use (for similar arguments see Seidl, 2007; Wry, Lounsbury & Glynn, 2011).

Although critics rightfully point out that the idea that organizations are communicatively constituted or discursively constructed is far from new (e.g., Sillince, 2010), we identify two important features that distinguish the CCO perspective from its various ancestors and siblings: First, the CCO perspective is primarily concerned with the fundamental question of the *ontological* status of organizations (Bisel, 2010; Putnam, Nicotera, & McPhee, 2009, p. 5; Taylor & Van Every, 2010, p. ix). Several scholars have already emphasized the importance of communication and discourse in organizational contexts (e.g., Boden, 1994; Ford, 1999; Ford & Ford, 1995; Sillince, 2007), but these scholars do not go so far as to tackle to sufficient theoretical depth the question of what an organization is. Second, in response to the ontological question, CCO scholars put forth a processual and dynamic understanding of organizations. In other words, they follow the idea that an organization is not reified and given, but, on the contrary, its perpetuation is continuously at stake and necessitates a continuous reproduction of communication. Accordingly, CCO scholars study organizational communication in order to trace the emergence of organizations as distinct and processual

entities (Taylor & Van Every, 2000), the boundaries of which are brought forth by communication activities (Luhmann, 2003; Schreyögg & Sydow, 2010; Taylor, 2009).

While the CCO perspective has successfully theorized the communicative constitution of organizational phenomena, it still faces methodological challenges in the empirical study of these processes (Putnam & Nicotera, 2010). Almost all empirical studies so far are based on qualitative approaches of merely local and limited scope. For instance, CCO scholars have analyzed the processes through which an organization emerges from communication events such as meetings (e.g., Castor & Cooren, 2006; Cooren et al., 2006; Spee & Jarzabkowski, 2011; Taylor & Robichaud, 2007), team interactions (e.g., Benoit-Barné & Cooren, 2009; Cooren et al., 2008), or leadership (Fairhurst & Cooren, 2009). These studies provide rich insights into local interactions by analyzing how single episodes of communication contribute to the emergence of organizations. However, they cannot show empirically how series of interactions "scale up" to form the organization as a whole and how they are able to maintain the perpetuated existence and stability of the organization (see Cooren & Fairhurst, 2009). Yet, as Taylor and his colleagues point out, CCO theorizing must also enable researchers to account for large and complex organizations as well (Taylor et al., 1996, p. 4).

Here, we argue that a more encompassing and comprehensive methodological approach is necessary in order for the CCO perspective to unleash its full theoretical potential. This, in turn, requires methodological tools that are not limited to the level of local interactions, but can take into account large structural features of communication patterns. It also requires research to focus on the connectivity between interactions that constitute organizations as ongoing processes of communication. In view of that and of the ubiquitousness of the network metaphor in the CCO literature (e.g., Taylor & Van Every, 2000), the network paradigm, as applied in organization studies (Borgatti & Foster, 2003), is a promising candidate for conducting large-scale, more encompassing studies of the communicative constitution of organizations. In order to evaluate to what extent existing network methodologies can handle the paradigmatic challenges of explicit CCO thinking (Ashcraft et al., 2009), we extract from our review of the CCO literature three main requirements that need to be met:

First, we argue that network analysis is suitable for the CCO perspective only if it treats communication (at least implicitly) as *constitutive* of organization. This criterion reflects the fact that the constitutive character of communication is fundamental to CCO thinking

(Cooren, 2012; Craig, 1999); that is to say, communication is not understood merely as a means to an end (which would boil down to an instrumental notion of communication; see Axley, 1984), but to fundamentally constitute and shape social reality. Accordingly, the CCO perspective rejects a so-called "container metaphor" of organizations, in which organization precedes communication (Ashcraft et al., 2009). Instead, organizations are conceptualized as essentially consisting of communication episodes.

Second, we argue that network analysis needs to account for the *emergent* and not fully determinable character of communication and thus of organization; a concept that is also central to the CCO perspective (Taylor & Van Every, 2000). In other words, communication processes cannot be completely and intentionally determined by individual actors. On the contrary, communication is understood to operate according to its own inherent logic (Luhmann, 1992).

Third, as a result of the ephemeral character of communicative episodes (Hernes & Bakken, 2003), organizations have to ensure that they perpetuate their communication, if they are not to disappear altogether. That is to say, their existence necessitates that every communication event calls forth and is linked to further communication events, which form and reform the organization over time (in other words, interactions "scale up" to organizations; Cooren & Fairhurst, 2009). This underlines the fundamentally *processual* character of communication and, consequently, also of organizations. Thus, network analysis ought to make it possible to capture the inherent dynamics of organizations.

In the following, we discuss to what extent the existing network approaches that deal with the communicative aspect of organizations already meet the three requirements of explicit CCO thinking; that is, (1) the constitutive, (2) the emergent, and (3) the processual character of organizational communication.

Network Approaches to Organization and Communication

In recent years, the network paradigm has gained a strong foothold in organization studies, both as a metaphor and a methodology. Borrowing largely from structural analysis in sociology (Tichy, Tushman, & Fombrun, 1979), most researchers in organization studies define a network as a set of vertices and a set of edges that indicate a relationship between the vertices. The vertices are also referred to as nodes, the edges as links or ties. Vertices typically represent individuals, organizational units, or organizations, while edges commonly represent

flows of communication or information, advice or influence, or goods or services (Brass, Galaskiewicz, Greve & Tsai, 2004). Whether the network paradigm and subsequent network analysis provide a suitable methodology for studying the relation between organization and communication remains an open question. In order to evaluate the extent to which the network paradigm is able to meet the basic assumptions of the CCO perspective (as outlined above), we discuss a number of network approaches that in one way or another address the relation between organization and communication.

Our paper complements recent reviews of the network paradigm in organization studies (Borgatti & Foster, 2003; Brass et al., 2004; Provan, Fish, & Sydow, 2007), which provide a compelling overview of theoretical and empirical research on interorganizational and intraorganizational networks. For the purposes of our discussion, we distinguish three strains of network approaches that differ in the degree to which the aspect of communication is central to each. We briefly present and evaluate selected studies of *networks of individuals* (where communication is represented by the networks' edges), *networks of human and non-human actors* (where the networks consist of both individuals and artifacts, the latter of which are communicational in origin), and *networks of topics* (where communication takes center stage by representing the networks' vertices). To offer a more rounded review of the literature, we additionally discuss network approaches outside the field of organization studies that also pay particular attention to communication.

Networks of Individuals

The most common network approach models organizations as *networks of individuals*. For instance, studies on governance networks investigate interlocking directorates between companies (for an analysis, critique, and assessment of this line of research, see Mizruchi, 1996). We speak of an interlocking directorate when an individual affiliated with one organization sits on the board of another organization. It is usually assumed that the existence of interlocking directorates "implies that these ties will be used, significantly, and perhaps predominantly, to communicate on a narrow range of issues relating to the objectives and subject of collaboration" (Ahuja, 2000, p. 430). These networks represent a particular take on interorganizational communication in that the underlying network paradigm hinges on individuals who participate in communication in at least two organizations and thus act as transmitters and recipients of information between these organizations (Ahuja, 2000; Schilling & Phelps, 2007).

Another well-researched aspect of networks of individuals is intraorganizational communication. For example, Cross and Cummings (2004) use data on egocentric networks of engineers and consultants to explain individual performance in knowledge-intensive work. In the analysis of these governance networks, individuals are represented by vertices and the knowledge they share with each other in communication is represented by edges. Like the *inter*organizational network approach, the *intra*organizational network approach puts individuals at the center of attention.

While research on networks of individuals does not employ an explicit theory of communication, the structural properties of such networks suggest the paramount importance of communication. Indeed, some scholars emphasize the value of communication between managers and directors because it reduces ambiguity and facilitates the diffusion of innovation and learning about business practices (e.g., Carpenter & Westphal, 2001; Gulati & Westphal, 1999). Others analyze the collaborative relationships among managers or employees; for instance, by tracking electronic communication (Ahuja & Carley, 1999; Burkhardt & Brass, 1990). In these and many other studies (e.g., Adamic & Adar, 2005; Kijkuit & van den Ende, 2010), the vertices represent individuals, groups, or organizations of which individuals are members, whereas the edges represent the communication that takes place between those individuals. Therefore, communication is a mere proxy for the relationship between individuals, organizational units, or organizations and ultimately remains a "black box."

Evaluating to what extent this network approach is suitable for studying the communicative constitution of organizations reveals a mismatch with the first and most fundamental criterion—the *constitutive* character of communication. Our examples point out that this network approach centers on individuals and the positions they occupy in their networks, whereas communication is the basis of relationships between individuals. Evidently, according to this approach communication is instrumentally perceived as a means to an end (Axley, 1984). The notion of communication as constitutive of organizations, in contrast, is based on the assumption that communication fundamentally constitutes and shapes social reality (Craig, 1999). We therefore consider networks of individuals as an inadequate tool for studying the communicative constitution of organizations.

Networks of Human and Non-Human Actors

In contrast to studies that regard organizations as networks of individuals, research on *networks of human and non-human actors* addresses communication much more explicitly. Such research (e.g., Contractor & Monge, 2002; Monge & Contractor, 2003) fuses the immateriality of *conversations* with the materiality of *texts* (Taylor, 1999): communication episodes establish a relationship between individuals, as well as between individuals and artifacts. Characteristically, artifacts are understood as instances of texts or other forms of materialized communication (e.g., organizational charts, job descriptions, standard operating procedures, policy manuals, or employment contracts; see Corman, 1990; Corman & Scott, 1994). In this respect, network studies of human and non-human actors are grounded in *actor network theory* (Latour, 2005; for an overview, see Law & Hassard, 1999), which assumes that even non-human entities (e.g., texts or other artifacts) can be perceived as actors, in that their existence "makes a difference" (Cooren, 2006). Consequently, both individuals and artifacts are treated as network actors (i.e., vertices), although only individuals relate to each other as well as to artifacts, whereas artifacts do not relate to other artifacts but exclusively to individuals.

Research on networks of human and non-human actors assigns to communication the critical role of maintaining the relationship between individuals and artifacts, which at least implicitly signals a constitutive understanding of communication (as emphasized also by Ashcraft et al., 2009, p. 16). However, the communicative constitution of organizations still remains largely hidden beneath the networks' edges. The respective studies show who knows whom, who knows what, and how to retrieve or allocate that information, but this does not tell us anything about the episodes of communication that constitute organization. Most importantly, networks of human and non-human actors do not reveal how communication episodes scale up to organizations over time, and thus fail to account for the processual character of communication. On the whole, these studies take into account the materiality of communication (artifacts, texts, etc.) as meaningful elements (i.e., vertices) of organizational networks but stop short of the communicative turn of *explicit* strains of the CCO perspective. After all, networks of human and non-human actors still tend to perceive organizations primarily as networks of individuals. Nevertheless, we regard these and other studies on human and non-human actor networks as an important step towards grasping the communicative constitution of organizations.

Networks of Topics

In comparison to the two previously discussed strains of network research, recent studies by Oliver and Montgomery (2005, 2008) or Pentland and Feldman (2007) take another step towards putting communication at the center of organizational network analysis. The approach these studies represent, which we label *networks of topics*, regards communication as the core element of organizations. Here, a network consists of a set of vertices representing linguistic concepts and a set of edges representing individuals, whose cognition connects them to these concepts. In a sense, the networks presented in these studies are the inverse of networks of individuals, where individuals are represented by vertices and communication episodes by edges (see Oliver & Montgomery, 2005, 2008).

Some of the studies that deal with networks of topics take a look at individuals' membership in two or more academic disciplines (Barnett & Danowski, 1993) or their participation in various discussions that lead to the emergence of professions (Oliver & Montgomery, 2005, 2008). For instance, Barnett and Danowski (1993) take the ten divisions and three interest groups of the International Communication Association (ICA) to represent intraorganizational communication (vertices) and then infer the interorganizational communication among these divisions and interest groups from the membership of 2,116 individuals (edges) in two or more divisions or groups. Similarly, Oliver and Montgomery (2005) derive a list of 13 professional issues (vertices) from the full transcript of a single meeting and then identify 29 speakers (edges) who mention two or more of these issues during each speaker's five-minute talk. Both of these studies employ the standard repertoire of network analysis (e.g., centrality measures such as betweenness, closeness, and degree; for conceptual clarifications, see Freeman, 1979) to assess the construction of organizational boundaries.

In our estimation, networks of topics are better suited than either of the other two strains of network research (i.e., networks of individuals or networks of human and non-human actors) to the study of the communicative constitution of organizations. The networks-of-topics approach puts communication in the spotlight of research by treating linguistic concepts (e.g., professional issues) as the vertices of the network (Oliver & Montgomery, 2005). In essence, this approach portrays organizations as domains of language or, in other words, as cognitive domains. Echoing the CCO perspective, which essentially rejects the container metaphor of organization (as emphasized above; see also Ashcraft et al., 2009), Montgomery and Oliver (2007, p. 662) are critical of the principle that communication simply occurs within

previously defined organizational boundaries; instead, they emphasize the dynamic forces that give rise to organizational boundaries. However, in most of these studies the constitutive property of communication is merely implicit, reflecting the focus on the cognition of individuals and its expression in communication. Consequently, the authors do not examine closely the actual communication episodes that span and maintain the boundaries between divisions and interest groups, nor do they specify whether the issues that represent the vertices arise, for example, in the course of a heated discussion or as isolated statements.

In this context, we need to consider that the networks-of-topics approach fundamentally differs from the CCO perspective in its ontological assumption about the organization. While Oliver, Montgomery, and colleagues understand organizations primarily as cognitive domains, CCO thinking emphasizes the self-referential reproduction of communicative practices beyond individual cognition and agency (e.g. Luhmann, 2003; Taylor & Van Every, 2000). This suggests that networks of topics are unable to capture the emergent character of an organization as communication. Oliver and Montgomery (2008), for example, first have to identify a set of linguistic concepts (i.e., professional issues) in order to execute their network analysis. In general, research on networks of topics is necessarily selective in the definition of such concepts. Similarly to the other two network approaches presented above, the networks-of-topics approach regards networks as fixed sets of interrelated linguistic concepts, which makes it hard to fully reflect the processual and dynamic character of organizations as communicative entities. Overall, research on networks of topics may well be "advantageous because it is 'theory lean'" (Oliver & Montgomery, 2008, p. 1151), but the lack of an explicit theory of communication is precisely what prevents this approach from being directly able to tackle the question of how communication constitutes organizations.

Network Approaches Outside Organization Studies

Outside the field of organization studies there are several other network approaches that also primarily center on communication. Drawing on these may help develop a network approach that is compatible with the assumptions of the explicit CCO perspective (Ashcraft et al., 2009). In the following, we briefly discuss the use of network analysis in *bibliometric studies* (e.g., Newman, 2001), *hyperlink networks* (e.g., Park & Thelwall, 2003), and *cultural dynamics* (e.g., Mohr, 2000) as three prominent examples of communication-centered network approaches from outside the field of organization studies.

Bibliometric studies describe the structures and dynamics of scientific collaboration in terms of bibliographic coupling (Kessler, 1963), co-citation (Small, 1973), or co-authorship of publications (Katz & Martin, 1997; Newman, 2001). In the first two cases, scientific publications (which are, of course, particular instances of textual communication) are connected either if they share one or more common references to a third publication, or if they are both cited by the same third publication. In the last case, individuals are connected if they co-author one or more scientific publications. As in the case of research on networks of individuals, bibliometric studies represent either publications or co-authors by vertices, whereas edges are representations of bibliographic coupling, co-citation, or co-authorship and therefore proxies for communication in the networks of scientific collaboration. However, even though scientific communication typically takes place within organizations (e.g., universities) or brings forth communities (e.g., schools of thought), bibliometric studies are not concerned with the relationship between organization and communication as such, nor do they describe how such scientific communication gives rise to organizations as recognizable actors.

Following closely the notion that documents such as scientific publications are connected either by citing the same third publication or by being cited by the same third publication, one stream of research in information science inquires into *hyperlink networks* (for a review, see Park & Thelwall, 2003). The basic setup of these networks involves two web pages connected by a hyperlink (i.e., an electronic reference from one page to another). For example, Vedres, Bruszt, and Stark (2005) identify five genres of organizing technologies in the hyperlink network of East European civil society websites, and Ackland and O'Neil (2011) trace the social movement of environmental activist organizations back to their hyperlinking activities. Studies on hyperlink networks frequently refer to communication as the driving force underlying the emergence of these networks and the social phenomena with which they are associated, but, again, they are not concerned with the ontology of organizations as communication.

Studies rooted in sociology call for a more relational perspective that takes into account issues of network structures and dynamics (e.g., Cooper, 2005; Emirbayer, 1997; Somers, 1998). The broader social phenomenon of *cultural dynamics* lends itself to precisely such a perspective, as well as a respective analysis of networks, and for that reason it has attracted ample attention from scholars in sociology (for an introduction, see Mohr, 2000). Mohr and

Neely, for example, study the structure of power in various institutional fields. “After much close study and a long period of familiarization,” they identify 107 “key units of meaning” in 478 identity statements found in the 1888 edition of the New York City Charity Directory (Mohr & Neely, 2009, p. 222). Units of meaning and statements are comparable to the linguistic concepts and texts employed by research on networks of topics (e.g., Oliver & Montgomery, 2005). Using both key units of meaning and identity statements as vertices in a two-mode network (also known as affiliation network; see Breiger, 1974), Mohr and Neely reveal the particular power structures of the different institutional fields they are interested in. Their analysis of two-mode networks in cultural dynamics is close to the analysis of one-mode networks of topics in that they both require a set of linguistic concepts to begin with. Relational sociology as represented by the works of Mohr, Neely, and others offers important insights, particularly their application of network analysis to the study of the way cultural dynamics constitute and shape organizations on the level of institutional fields. However, and most importantly in our case, the suggested two-mode networks do not regard communication as central to the constitution of organizations.

The above overview shows that bibliometric studies, hyperlink networks, and cultural dynamics use network analysis to construct networks from communication in different manners; that is, in each case the respective research suggests different types of communication as vertices of the networks (e.g., scientific publications, web pages, or units of meaning in texts) and different ways of connecting them (e.g., by placing an edge between two publications whenever they share a common reference). These network approaches have been useful in research on a variety of issues, such as exploring the structures of scientific collaboration (Newman, 2001) or the power structures in affiliation networks (Mohr & Neely, 2009). Our own methodological proposal, which we describe below, is inspired by these earlier works that put communication at the center of network analysis.

Summary and Comparison

Table 1 offers a brief summary and comparative overview of existing network approaches. More specifically, it exhibits the degree of compatibility between the three strains of network research in organization studies that are explicitly concerned with the relation between organization and communication (we therefore exclude network approaches that originate outside organization studies). The three main approaches are compared with respect to the assumptions of the CCO perspective. In the fourth column we have added a new methodology

for the study of organizational communication networks, which we introduce in the next section. This network approach complements the existing approaches by directly reflecting the constitutive, emergent, and processual character of communication. Drawing upon the CCO perspective, we turn the logic of other network approaches to organization and communication inside out, so that a network's vertices represent communication episodes, while its edges represent the participation of individuals in communication.

Insert Table 1 about here

Turning Network Approaches to Organization and Communication Inside Out

Starting from the finding that existing network approaches to organization and communication are limited with respect to the theoretical assumptions of the CCO perspective, we develop our own methodological proposal. Taking the cue from Taylor and his colleagues (Taylor et al., 1996, p. 7) that "what we are accustomed to calling *organization* is at once actual (a network of conversations) and symbolic (a perceived actor, embodying the community as a whole)," we perceive organizations as networks of unfolding and interlocking communication episodes. With respect to network analysis, we identify communication episodes—as opposed to individuals—as the vertices of the network, thus turning the prevalent logic of collaboration networks and actor networks inside out. In our model, the respective edges no longer represent communication between individuals, but individuals who participate in communication (e.g., by taking part in a discussion or working on a shared document). In this context, the ways in which communication episodes unfold and interlock reflect the communicative constitution of organizations, just as "conversations mediated by individually negotiated speech acts" (Taylor et al., 1996, p. 36) form the communicational basis of organizations. We argue that this inside-out logic and the definition of communication episodes as the basic elements of networks allow organization studies to take into account the communicative constitution of organizations as put forth by the CCO perspective.

Let us illustrate our methodological proposal with an example. Consider two individuals *A* and *B* who have co-authored a document (e.g., a marketing report). From the first draft to the final version, both authors consecutively revise the document. Much like a listener replies to the previous speaker in a speech act, each revision of individual *A* in response to individual *B*

and vice versa concludes a single communication event. Thus, the document unfolds as a *sequence of communication events*, which we refer to as a *communication episode*. In addition, individuals *A* and *B* meet and hold a discussion in person (e.g., as detailed in meeting minutes). Their meeting likewise unfolds as a sequence of communication events in which *A* responds to *B* and *B* responds to *A*. Individual *B* furthermore interacts with a third individual *C* (e.g., by exchanging emails). Figure 1 shows the three communication episodes; that is, the marketing report co-authored by individuals *A* and *B* (Episode 1), the meeting minutes detailing their discussion (Episode 2), and the interaction via email between individuals *B* and *C* (Episode 3).

Insert Figure 1 about here

Figure 1 displays single communication events as rectangles of participating individuals (e.g., *A*/*B* for the first draft of the marketing report). Communication events emerge recursively within single communication episodes (solid arrows). Although the communication episodes unfold in parallel, they interlock where the same individual participates in any two episodes (dashed arrows); that is, communication events also emerge with relation to previous such events across multiple episodes (for a discussion of interlocking communication events, see Gibson, 2005). While working on the research report, individuals *A* and *B* have met to discuss an issue related to the document in question. Individual *B* has also exchanged several messages with individual *C*, drawing on the marketing report and the meeting with individual *A*. The network of unfolding and interlocking communication episodes, which reflects how the three individuals have co-authored the marketing report, met to discuss relevant issues, and exchanged emails, constitutes the organization that these individuals are members of. In other words, single communication events unfold into or scale up to communication episodes, which in turn interlock to form the organization at large.

If we apply to the above example the idea that organizations are networks of individuals, the three individuals will be represented by vertices, while the communication episodes they participate in (e.g., the co-authored marketing report, the face-to-face meeting, and the exchange of emails) will be represented by the connecting edges (see Figure 2.a). This approach undoubtedly helps us to analyze certain important elements of organizations, such as the flow of information (Ahuja & Carley, 1999; Burkhardt & Brass, 1990), by highlighting

the dyadic collaboration between individuals *A* and *B* as well as between individuals *B* and *C*. However, networks of individuals do not reveal anything about the topics of organizational communication hidden beneath the edges.

Networks of individuals are often one-mode projections of two-mode networks to begin with. One of the earliest examples of a two-mode network shows the affiliations of 18 women from various southern US states attending 14 social events (Davis, Gardener, & Gardener, 1941). Both women and events are represented by vertices, while the attendance of these women at one or more events is represented by edges. If we apply the model of such a two-mode network to our example, the vertices will represent both individuals *and* communication episodes, while the edges will represent the participation of these individuals in one or more episodes (see Figure 2.b). The most obvious one-mode projection is the interpersonal network of the 18 women, described above, or the collaboration network of individuals in our example.

Another, perhaps not so obvious, one-mode projection is the intergroup network of the social events that these 18 women are seen to attend (Breiger, 1974). Although this projection focuses on group membership rather than communication episodes, it prefigures our proposed approach to communication networks. When we apply this projection to our own example, each of the vertices represents each of the unfolding and interlocking communication episodes that lead to the network's creation (i.e., the document, the meeting, or the email exchange), while edges represent the participation of individuals in these episodes (see Figure 2.c). In this example, we use the two-mode projection (see Figure 2.b) merely as a methodological illustration of our argument for turning the network perspective inside out (i.e., turning Figure 2.a into Figure 2.c). We deliberately chose to restrict ourselves to a one-mode projection, where vertices represent exclusively communication episodes and edges represent exclusively the participation of individuals in such episodes. This methodological choice is in line with the explicit CCO perspective (Ashcraft et al., 2009): the one-mode projection allows us to put the *communicative* constitution of organizations at the center, while individual members remain in the background. This enables us to examine organizations as communicative entities with clarity, without the risk of confusion that two distinct types of vertices can cause.

Insert Figures 2.a, 2.b, and 2.c about here

In contrast to networks of individuals, our proposed communication networks put aside the mechanistic notion of communication (Axley, 1984) and focus instead on the constitutive properties of communication; that is, on organizations that unfold through interlocking communication episodes (Taylor & Van Every, 2000). This perspective also breaks away from the concept of networks of human and non-human actors, which additionally embeds instances of materialized communication (artifacts) in a network of individuals; for example, individuals *A* and *B* may always draw on a database of marketing reports to inform their face-to-face meetings and exchange of emails. Compared to research on networks of individuals and networks of human and non-human actors, research on networks of topics (e.g., Oliver & Montgomery, 2005, 2008) is closer to research on communication networks, except that it centers on linguistic concepts, as opposed to the constitutive role of communication with respect to organizations. For instance, Oliver and Montgomery (2008) built a network of topics by linking several linguistic concepts derived from a transcript of a professional conference marking the emergence of a Jewish lawyers association. However, they were able to build the network only *after* they had identified topics on the basis of linguistic concepts such as "achieving legitimacy for the Jewish legal system," "representation of Jewish lawyers in extra-professional committees," or "establishing a uniform fee structure among lawyers" (p. 1165). In contrast, our network approach does not presuppose any analytical decision about linguistic concepts in order to build the network. We simply take any communication episode (e.g., consecutive conversations on how to revise an article) as the network's vertex. Thus, the emergence of organizations as networks of communication events follows a "bottom up" direction (Cooren & Fairhurst, 2009), reflecting the inherent dynamics and processuality of communication (Taylor & Van Every, 2000).

Empirical Illustration of Organizations as Networks of Communication Episodes

In order to illustrate our network approach, we draw on qualitative and quantitative data from a case study on a small technology company based in Germany. The company provides one-stop solutions in mobile marketing. It uses an intranet-based information and communication system to facilitate collaboration among its employees. This system supports all organizational activities, ranging from research and development to marketing and sales. From the two-year history of the information and communication system incorporated in a company database, we obtain 12,043 revisions of 1,586 documents that have been authored by 29 individuals. In line with our proposed methodology, we treat these documents as

vertices of the network, given that each co-authored document is grounded in a history of episodes of back-and-forth communication (i.e., collaborative revisions).

Although our proposed network methodology generally makes it possible to capture all forms of communication, we restrict our empirical illustration to those documents that were co-authored by two or more individuals, thus excluding 1,108 single-authored documents. Our reason for doing so is that the mere existence of single-authored documents does not necessarily imply communication to begin with, simply because we can never be sure whether or not they have been read and understood by anybody else, which is a precondition for communication (Luhmann, 1992). Therefore, we flag these single-authored documents as isolates in the networks, which can be dismissed without consequence to network analysis. We also restrict our analysis to those episodes of communication that are immediately observable in the electronic information and communication system of the company. We should stress that excluding other forms of communication, such as face-to-face conversations, does not deny their general relevance. They simply require a somewhat more cumbersome process of observation and transcription (Oliver & Montgomery, 2008; Taylor & Robichaud, 2007).

The remaining subset of 478 co-authored documents reflects the collaboration of 24 individuals. These documents are mostly research protocols, development plans, marketing reports, sales estimates, and administrative guidelines. Because all documents have a history of collaborative revision, each document represents an episode of communication on a particular theme or topic (e.g., a specific project). In order to highlight the differences between our own and other network approaches, we first analyze the data in question on the basis of the network-of-individuals approach. This yields a network of 24 individuals (vertices) and 205 collaborative relations (edges), as shown in Figure 3. Almost three quarters of all employees collaborate at one time or another (network density=.743). They may easily reach each other since close to 90 percent of their collaboration is transitive (network transitivity=.875, which indicates that “a friend of a friend is a friend”; see Wasserman & Faust, 1999, p. 165, for a discussion of transitivity). The dense and transitive collaboration encompasses almost all employees, with the notable exception of individuals 15 and 20, who joined the company only in the second half of the second year of our study and had had little chance to collaborate with others in the meantime. In the network of individuals shown in Figure 3, the topics the individuals were working on at the time remain hidden beneath the

network's edges and are therefore inaccessible to research. In contrast, approaching organizations as networks of communication episodes highlights the topics that emerge and vanish in the continuous reproduction of organizations as communicative entities.

Insert Figure 3 about here

Drawing on the CCO perspective (Ashcraft et al., 2009), we propose a significant change to the network paradigm in organization studies by turning the organizational network's underlying communicative structure inside out and thus rendering it available to further analysis. To achieve this, we apply our proposed methodology to the same data. In contrast to networks of individuals, our approach allows for the study of organizations as emergent processes of communication. Accordingly, our study yields 478 documents (vertices) and 74,660 individual participations in communication (edges), as depicted in the communication network presented in Figure 4. As in the case of networks of individuals, established measures, such as density and transitivity, can be readily utilized to assess the network of communication episodes. Here, these network measures confirm the close collaboration of individuals across topics (density=.655, transitivity=.8). In order to identify the most densely connected body of organizational communication within these 478 documents, we use a *k*-core decomposition, which repeatedly deletes all vertices with less than *k* relations until the maximal connected network component is found (for details on the algorithm and its interpretation, see Seidman, 1983). The core of the organization comprises 257 documents (*k*-core=7).

To bridge the local level of unfolding communication events and the global level of the organization as a network of interlocking communication episodes, we conduct a complementary genre analysis of all documents in the core of these 257 documents. With regard to topics, we find that 97 documents involve research and development, while 91 documents involve marketing and sales. The remaining 69 documents concern a broad variety of topics, ranging from administrative guidelines to yellow pages (for a definition of topics within organizational genres, see Yates & Orlikowski, 1992). In this case, the structure of the core is such that a sample of a few documents within densely connected network clusters can offer a glimpse of the topics covered by the entire range of documents contained in those clusters.

Insert figure 4 about here

The communication network depicted in Figure 4 reflects the communicative constitution of the company over the course of two years. The history of revisions of those documents enables us to investigate how communication evolved during that period. To illustrate the unfolding and interlocking of communication episodes, we split the two-year period into six-month intervals (see Figure 5). On the basis of our qualitative genre analysis of the documents, we use two shades of gray to differentiate between vertices that refer to communication related to research and development and marketing and sales, respectively. Similar documents tend to cluster with individuals participating in communication that best suits their educational background, functional role, or rank in the organization. For example, research protocols cluster with engineers, who work closely together in teams, but they are separate from marketing reports, which reflects the fact that in the case firm engineers do not work often with sales managers.

Insert Figures 5.a, 5.b, 5.c, 5.d about here

Figure 5.a exhibits the communication network during the first half of the year 2006. Documents related to research and development are represented by dark gray vertices, documents related to marketing and sales are represented by light gray vertices, while the remaining white vertices represent various other documents such as administrative guidelines. Note that the overwhelming majority of documents in the research and development category coincides fittingly with the early days of the company since its founding in late 2005. Marketing and sales projects are seen to pick up half a year after the launch of the company, by which communication on research and development noticeably decreases (Figure 5.b). Figures 5.c and 5.d mark a shift of activity towards marketing and sales, as the increase in corresponding documents shows. The analysis of the communication network over a period of two years thus reveals that the strategic agenda of the company completely shifted its focus from research and development to marketing and sales.

In sum, the analysis of communication networks shows how communication episodes unfold and interlock to constitute the organization. In our example, communication episodes are identified as documents and are represented by the vertices of the network, whereas the connections between the communication episodes are represented by the network's edges. Thus, this form of visualization enables us to depict the organization as a comprehensive communicative entity that arises and exists within and across topics anchored in documents. It reveals that communication topics cluster with individuals participating in organizational communication. These clusters largely differentiate and structure the business areas of the organization (e.g., research and development, marketing and sales, etc.).

As illustrated by the case study, our proposed methodology enables researchers who embrace the CCO perspective to study organizations as broader networks of communication episodes and thereby identify emergent structures and dynamics in terms of topics of communication, related, for instance, to research and development or to marketing and sales. Furthermore, the communication-networks approach makes it possible to track the emergence and development of topics in organizational communication over time—in our case the communicative shift from research and development to marketing and sales. What is more, communication networks provide a methodological answer to questions such as that raised by Cooren and Fairhurst (2009); namely, how local interactions "scale up" to form organizations. If we conceive of organizations as networks of unfolding and interlocking communication episodes, we observe that organizations transcend single interactions and instead dynamically cluster around particular topics.

Discussion and Conclusion

In this paper, we have presented networks of communication episodes as a new methodological approach that makes it possible to capture organizations as unfolding and interlocking communicative entities. For this purpose, we have turned the prevalent logic of network analysis inside out by defining communication episodes as the vertices and individuals as the edges of organizational networks. In contrast to research on networks of individuals, networks of human and non-human actors, or networks of topics, the inside-out logic of communication networks follows closely the explicit CCO perspective in its ontological assumptions (Ashcraft et al., 2009; Cooren et al., 2011). In particular, communication networks are compatible with the three main assumptions of the CCO

perspective; namely, that communication is constitutive of organizations, emergent, and processual in nature.

We illustrated the benefits of applying the networks-of-communication-episodes approach with an empirical case study, which helped us demonstrate that topics of organizational communication differentiate and structure the business areas of organizations. In this context, we drew on the work of authors who have already accomplished this shift in theory by placing communication at the very center of organizational analysis (e.g., Taylor & Van Every, 2000). Applying the proposed methodology, we were able to shed new light on the communicative constitution of organizational structures and dynamics. Our illustrative case revealed the significant difference between networks of individuals and networks of communication episodes, especially by capturing the dynamics of organizations as networks of ongoing communication processes that lead to the rise and fall of topics over time. Compared to network approaches that center on individuals, this approach offers a more dynamic view of organizations as processual entities. What is more, a longitudinal analysis of communication networks makes it possible to track the emergence and development of topics in organizational communication (in our case study, for instance, the gradual communicative shift from research and development to marketing and sales).

The overall contribution of our methodological proposal is twofold: First, we contribute to the field of organization studies in general by providing the CCO perspective with a methodological means of capturing the emergence and perpetuation of large, complex organizations as communication-based entities (Taylor et al., 1996, p. 4). In particular, this methodology facilitates the empirical investigation of central issues in organization studies such as (a) the micro-mechanisms of change and stability, (b) the link between micro-level and macro-level phenomena, and (c) the relation between emergence and control—all of which are central issues in organization studies (see Introduction).

With regard to the micro-mechanisms of *stability and change*, our theoretical discussion and empirical illustration show how the unfolding and interlocking communication episodes bring forth and reproduce the communicative entity that we call organization. Following the CCO perspective, we see that an organization is stabilized *through* change; that is, through the ever-changing communication processes that constitute the organization (see Ford & Ford, 1995; Taylor & Van Every, 2000). Our proposed network approach provides the CCO perspective with a powerful means of showing that, while communication episodes collectively contribute

to the stabilization and continuous reproduction of the organization as a whole, they are inherently dynamic in nature. Our empirical illustration highlights the benefits of this methodology, which lends itself to visualizing, pinpointing, and tracking the dynamics of communicative issues and business areas prevalent in many organizations.

Even though our proposed network approach aims primarily at elucidating the meso or translocal level of organizations as comprehensive processual entities, it also captures the various communication episodes (as vertices of the network) that occur on the local level. Thus, this methodology is particularly suited to studying the link between organizational emergence on the local level and its stabilization on the translocal level, as it makes it possible to *zoom in* on the details of each of numerous communication episodes, as well as to *zoom out* (Nicolini, 2009) and view the organization as a broader network of interconnected communication (especially in combination with a qualitative genre analysis of conversations or texts, as our empirical example showed). This methodology can transcend or even eliminate the common dichotomy between different levels of analysis, thus approximating a "flat" view of the social realm (see Latour, 2005). In this regard, our study goes beyond the scope of earlier empirical studies in CCO thinking, which focus primarily on the analysis of local interactions (e.g., Cooren et al., 2008). At the same time, we acknowledge an organization's fundamental embeddedness in wider societal practices (Luhmann, 2003; Seidl, 2007), which compares favorably to works in *new structuralism* (e.g., Lounsbury & Ventresca, 2003; Wry et al., 2011) that have scrutinized the relation between organizations and overarching, institutionalized practices. However, we complement these works with a micro-founded methodology that focuses on the bottom-up processes from the local level of individual communication events to the translocal level of organizations (Cooren & Fairhurst, 2009).

Furthermore, our proposed network approach makes it possible to trace the emergence of organizational structures back to the micro level of unfolding and interlocking communication episodes (Luhmann, 2003; Taylor & Van Every, 2000), which provides an alternative view on the relation between *emergence and control* by foregrounding communication episodes as vertices of the network and de-centering individuals as edges between the vertices. Our theoretical discussion and empirical illustration highlight the emergent nature of communication, which extends beyond individual (i.e., managerial) agency and control. Consequently, our methodology provides a means of grasping the organization as a plenum of

non-human agencies (i.e., of the agency of the very communication episodes that bring forth the organization), as emphasized by Cooren (2006).

Second, our study also contributes to the literature on organizational networks (e.g., Borgatti & Foster, 2003). Our methodological proposal is inspired by network analysis in bibliometric studies (Newman, 2001), hyperlink networks (Park & Thelwall, 2003), and cultural dynamics (Mohr, 2000), all of which place communication at the center of attention, and extends existing network approaches that have started to acknowledge the pivotal role of communication in capturing social phenomena. Most notable among such approaches are studies on networks of individuals (e.g., Ahuja & Carley, 1999; Burkhardt & Brass, 1990), networks of human and non-human actors (e.g., Contractor & Monge, 2002; Monge & Contractor, 2003), and networks of topics (e.g., Montgomery & Oliver, 2007; Oliver & Montgomery, 2005, 2008). Although the latter approach is well capable of putting communication at the center of attention, we extend its scope by proposing a methodology that captures the very emergence of organizations in communication episodes. What is more, we have developed a "theory-rich" methodology, which explicitly links the concept of communication to organizations by bringing the CCO perspective into the network literature, in contrast to "theory-lean" alternatives (Oliver & Montgomery, 2008, p. 1151). We believe that this link to organization theory contributes towards equipping network studies of organizations with a well-developed ontology of organizations that centers on communication, and helps future research to study organizations as networks of unfolding and interlocking communication episodes.

In conclusion, we also want to point out some of the limitations of the proposed methodology, as demonstrated in our empirical illustration, as well as potential avenues for further methodological development. Our empirical illustration focuses on a single type of communication; that is, digitally available documents. However, as already stressed above, the proposed network approach is not limited to these forms of communication but is generally suited to mapping organizations more comprehensively than our brief illustrative example has been able to show. Applying our methodology to other forms of organizational communication, such as face-to-face conversation, requires the observation of such conversations and their transcription into textual form. Thus, future researchers who intend to use this methodology to study other forms of communication than the ones covered here will need to find ways of coping with the higher complexity of the network that this entails. In this

regard, a two-mode network depicting the two modes of communication can be particularly helpful. Such an extension of our methodological proposal would benefit from recent advances in network analysis of two-mode networks (Latapy, Magnien, & Del Vecchio, 2008). Finally, employing different ways of defining the network edges could also help expand our proposed network approach. While in our approach the edges are conceptualized as individuals participating in distinct communication episodes, conceptualizing edges as cross-references between communication episodes, for example, might prove more suitable for particular organizational settings, where the participation of specific individuals in the communication episodes might be difficult or even impossible to trace. As these final remarks underline, the proposed network approach lends itself to further development and can be adjusted to a broad range of research questions.

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Table 1: Network Approaches to Organization and Communication

	Networks of Individuals	Networks of Human and Non-Human Actors	Networks of Topics	Networks of Communication Episodes
Representation of Vertices	Individuals	Individuals and artifacts	Linguistic concepts in communication	Communication episodes
Representation of Edges	Communication; either implicitly or explicitly	Communication	Reported cognition of individuals	Participation of individuals in communication
Constitutive Character of Communication	Low (instrumental)	Moderate (constitutive-implicit)	Moderate (constitutive-implicit)	High (constitutive-explicit)
Emergent Character of Communication	Low	High	Moderate	High
Processual Character of Communication	Low	Low	Moderate to high	High
Representative Studies	Ahuja 2000; Ahuja & Carley 1999	Contractor & Monge 2002; Monge & Contractor 2003	Montgomery & Oliver 2007; Oliver & Montgomery 2005, 2008; Pentland & Feldman 2007	

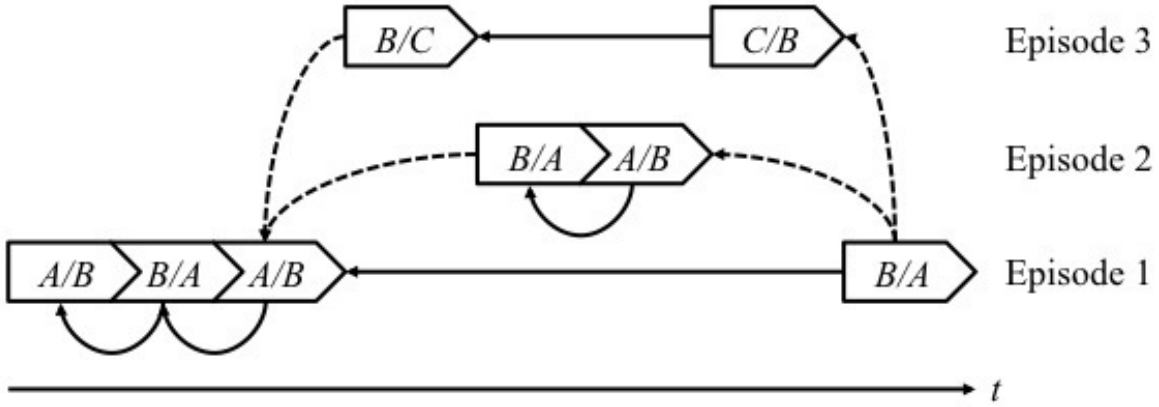

Figure 1: Unfolding and Interlocking Communication Episodes

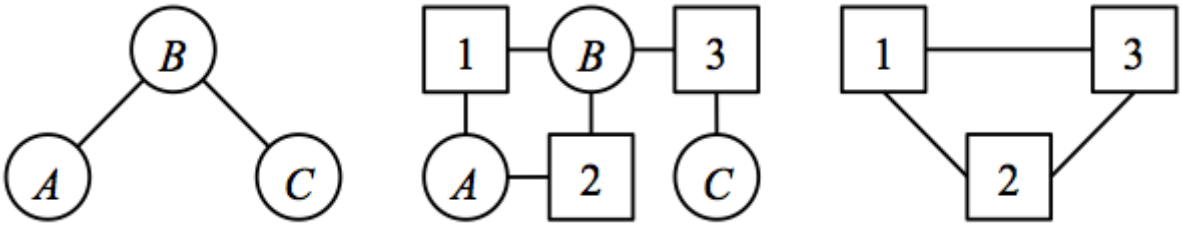

Figure 2: Possible One-Mode Projections of a Two-Mode Network

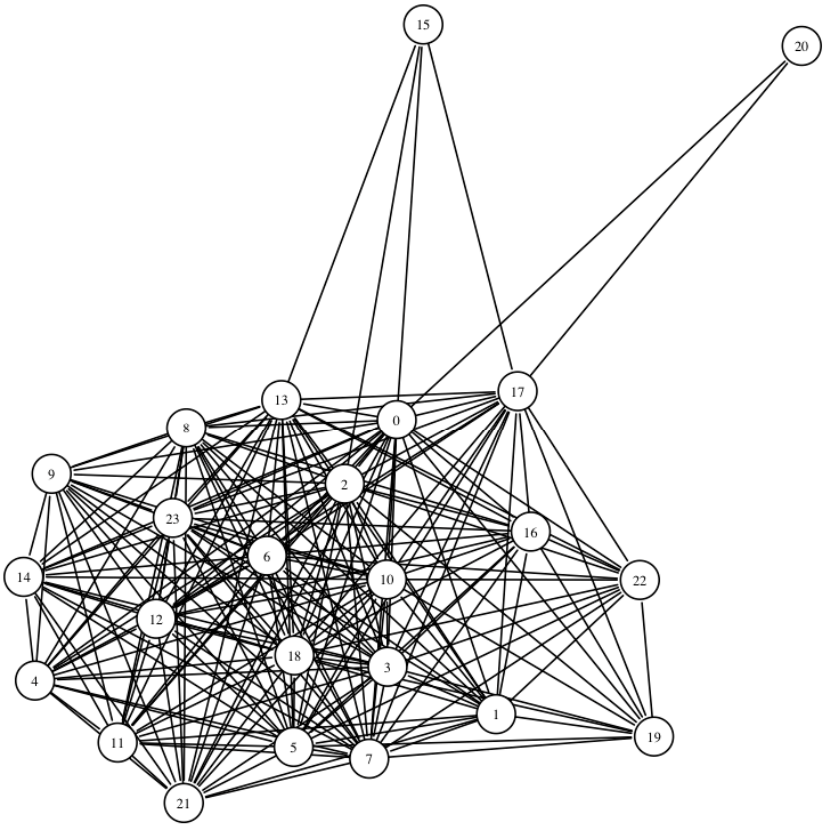

Figure 3: Organization as a Network of Individuals

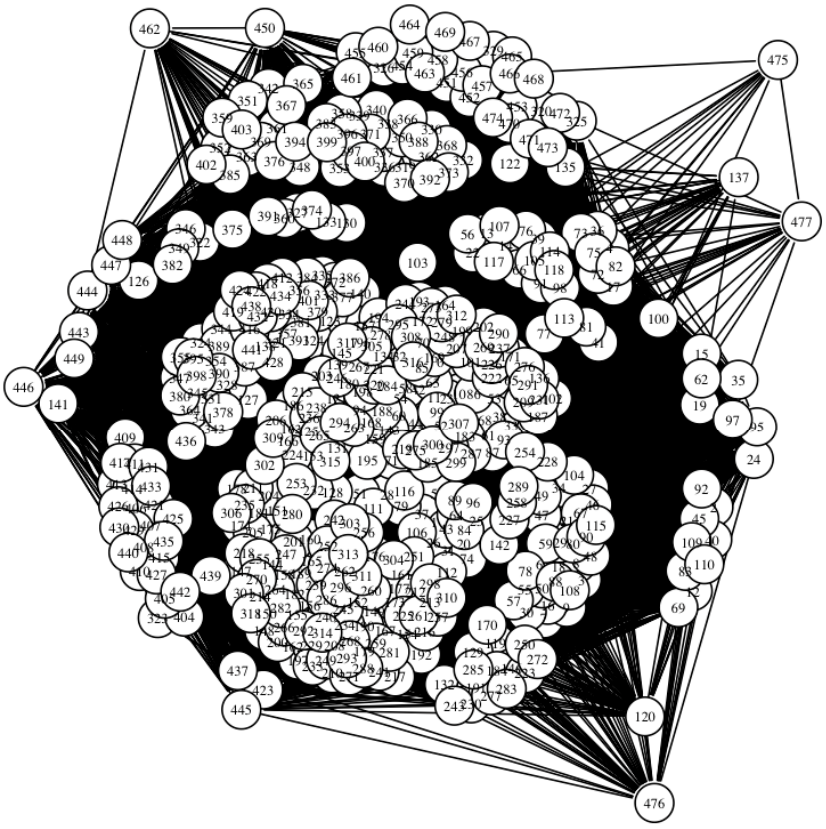

Figure 4: Organization as a Network of Communication Episodes

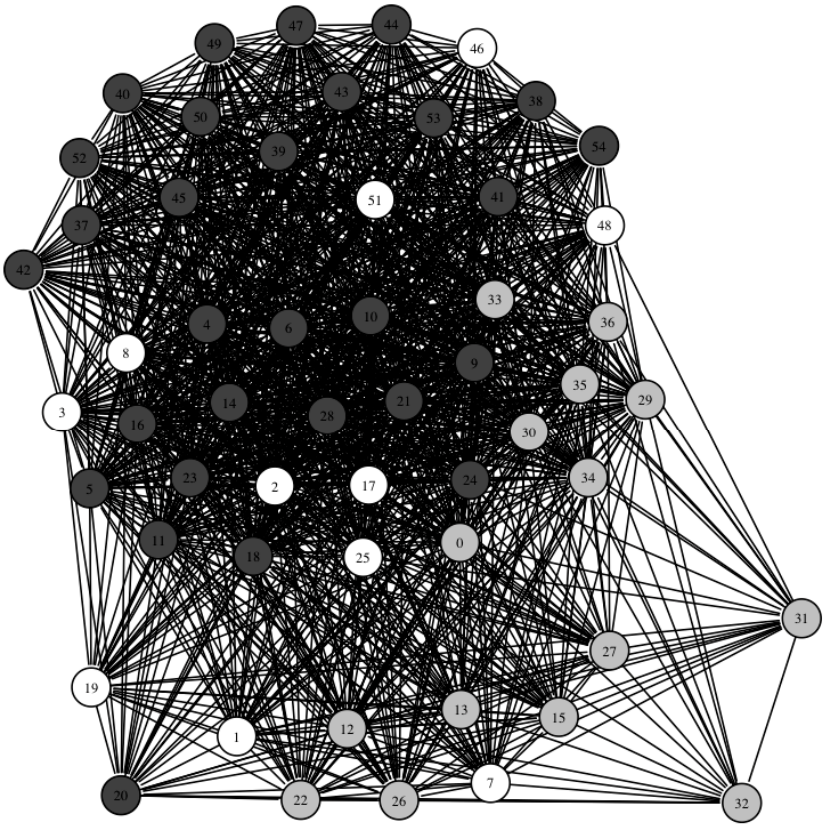

Figure 5a: Network of Communication Events (Interval 1)

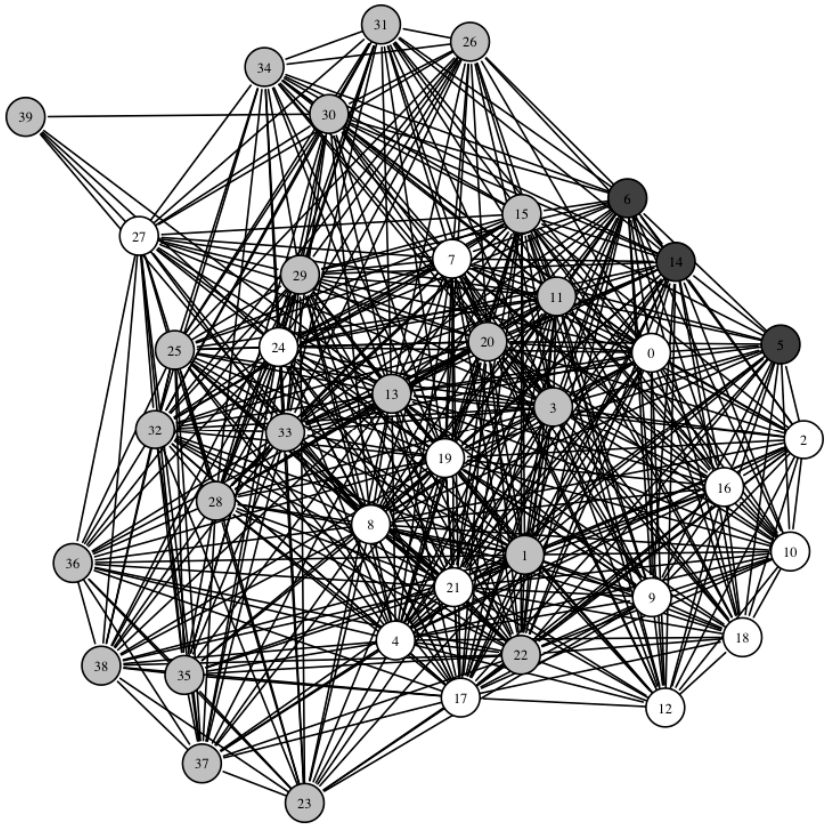

Figure 5b: Network of Communication Events (Interval 2)

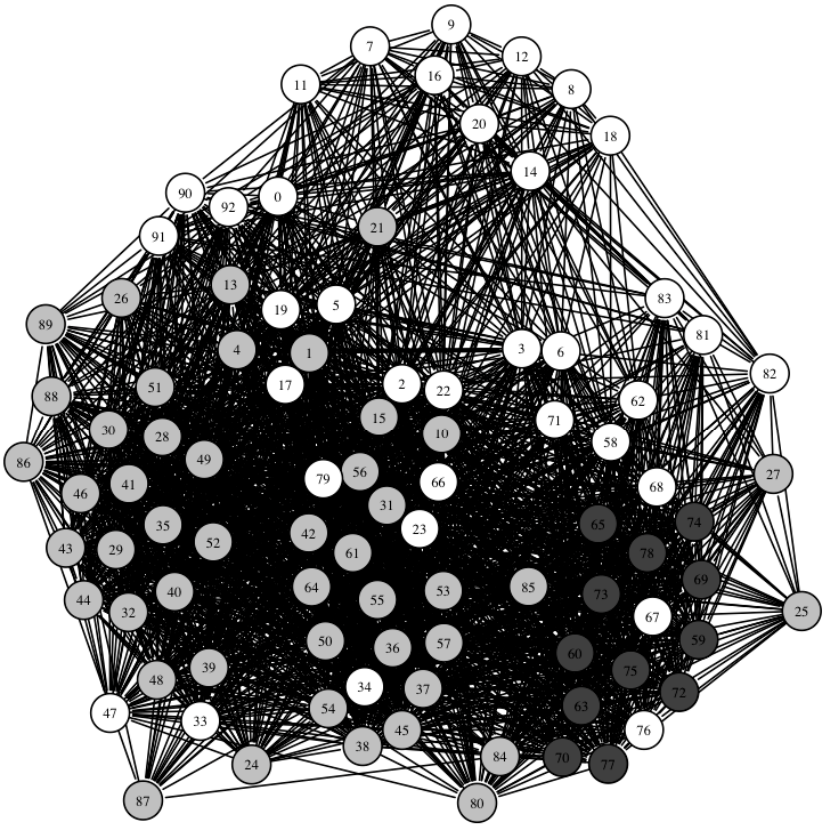

Figure 5c: Network of Communication Events (Interval 3)

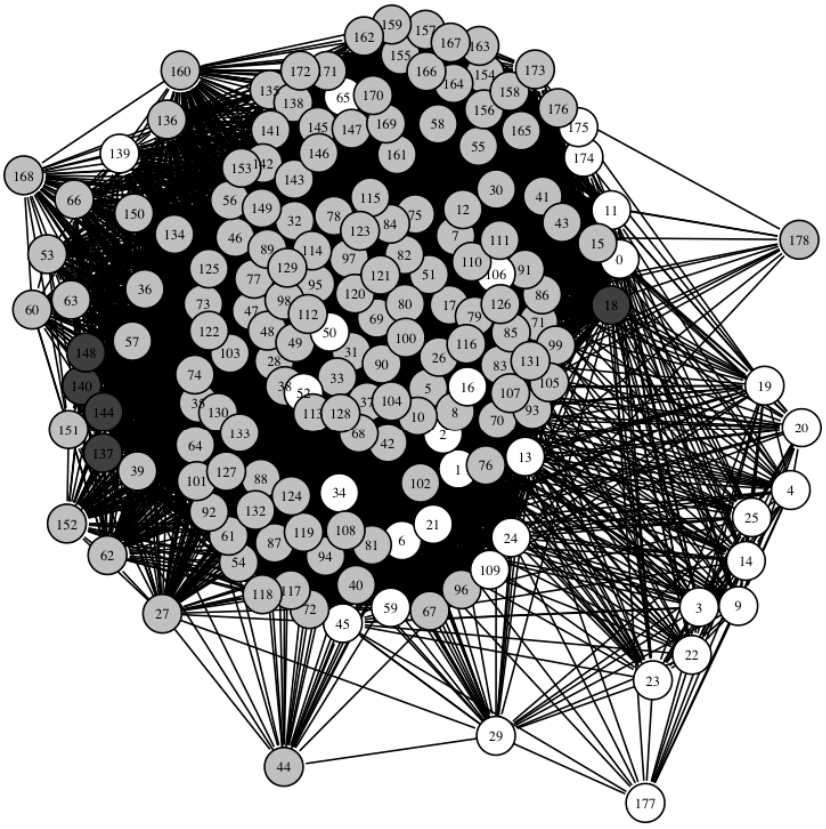

Figure 5d: Network of Communication Events (Interval 4)

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